MODELS

Fibre Channel Host Controller - PCI
223180-B21
223180-B21 Int'l
223180-291 Japan

KGPSA-BC PCI Host Bus Adapter (Fabric)
380574-001

SUN S-Bus Host Adapter
123503-001

Fibre Channel Storage Hub 7
234453-001
234453-B31 Int'l
234453-291 Japan

Fibre Channel Storage Hub 12
295573-001
295573-B31 Int'l
295573-291 Japan

Compaq Storage Hub 12 Management Option
159262-B21

Fibre Channel Storage Switch 8
380591-B21

Fibre Channel Storage Switch 16
380578-B21

Fibre Channel SAN Switch/8 with Fabric Operating Software
158222-B21

Fibre Channel SAN Switch/16 with Fabric Operating Software
158223-B21

EBS BackPaq
(Hub 7, FCTC, Backup Software)
160999-001
160999-B31 Int'l

Fibre Channel Tape Controller
340654-001
340654-B31 Int'l
340654-291 Japan

Compaq StorageWorks Enterprise Backup Solution (EBS)

Exponential growth of information has led to an enormous volume of data stored across enterprise networks. IT organizations are finding that backing up and restoring data is becoming more and more challenging. Compaq customers using Windows NT, Novell NetWare, Alpha Tru64™ or Sun Solaris servers need a scalable, high-performance solution to meet their present and future data storage backup and restore requirements. The Compaq StorageWorks Enterprise Backup Solution (EBS) provides a unique solution to the backup dilemma by providing a consolidated backup of multiple servers over a high speed, independent Fibre Channel storage network to centrally attached SCSI tape libraries.

Compaq understands that customers have a variety of product and solution needs based on price, performance, total cost of ownership, lower management costs, future scalability, and investment protection. To that end, EBS has increased its product set and has segmented EBS to fit various market segments. The Compaq StorageWorks EBS family segmentation will help provide customers with a quick understanding of which EBS solution is right for their needs.

EBS for Workgroups, EBS for Departments, EBS for Data Centers

This segmentation will fit the appropriate customer needs while still offering the same EBS features :

- An independent Fibre Channel loop capable of transferring data at 100 megabytes/second
- Fibre Channel Host Adapters
- Fibre Channel Interconnect components create FC Arbitrated Loops or Fabrics that marry FC tape controllers and libraries to the servers connected.
- Fibre Channel Tape Controllers that convert Fibre Channel to parallel SCSI protocol for the attached DLT 35/70 tape library
- Automated tape libraries with multiple DLT drives
- Storage management software that takes advantage of the added bandwidth of Fibre Channel and allows multiple servers to share a centralized tape drives and tape libraries

QUICK REFERENCE GUIDE

	EBS BackPaq	EBS for Workgroups	EBS for Departments	EBS for Data Centers
Recommended OS	NT and/or NetWare	NT and/or NetWare	NT and/or NetWare	NT, Tru64, Solaris
PCI Host Bus Adapter (Loop)	✔	✔	✔	
KGPSA-BC PCI Host Bus Adapter (Fabric)				✔
SUN S-Bus Host Adapter				✔
Fibre Channel Hub 7	✔	✔		
Fibre Channel Hub 12			✔	
Fibre Channel Hub 12 Management Module			✔	
Fibre Channel Tape Controller	✔	✔	✔	
Fibre Channel Tape Controller - II		✔	✔	✔
Fibre Channel Storage Switch 8				✔
Fibre Channel Storage Switch 16				✔
Fibre Channel SAN Switch/8				✔
Fibre Channel SAN Switch/16				✔
Compaq Model 35/70 DLT Library	✔	✔	✔	
Compaq StorageWorks TL891	✔	✔	✔	
Compaq StorageWorks TL895			✔	✔
VERITAS Backup Exec	✔	✔	✔	
CA ARCserveIT		✔	✔	
VERITAS NetBackup				✔
Legato NetWorker				✔

MODELS *(continued)*

Fibre Channel Tape Controller – II
152975-001
152975-B31 Int'l
152975-291 Japan

DLT Tape Library Model 3570-2 (2 drives x 15 cartridges)
295555-002
350365-002
295555-B32 Int'l
350365-B32 Int'l
350365-291 Japan

TL891, DLT Tape Library
(2 drives x 10 cartridges)
120875-B22 (TT)
120876-B22 (rack)
120875-B22 (TT) Int'l
120876-B22 (rack) Int'l
120875-B22 (TT) Japan
120876-B22 (rack) Japan

TL895, DLT Tape Library
(up to 7 drives x 96 cartridges)

*349350-B2x**
"x" is no. of drives
349350-B2x Int'l*
"x" is no. of drives
349350-B2x Japan*
"x" is no. of drives

EBS ADAPTERS

Fibre Channel Host Adapter (PCI)

EBS for Workgroups and EBS for Departments

The Fibre Channel Host Controller is a high-speed PCI card that provides server connectivity to the Fibre Channel Arbitrated Loop. The Fibre Channel Host Controller card is supplied in a kit that also includes one 5m Multi-Mode Fibre Channel Cable and two Gigabit Interface Converters (GBICs). These GBICs are required to attach the Fibre Channel cable to the Fibre Channel Host Controller card and to the Storage Hub 7 or Storage Hub 12.

KGPSA-BC PCI Host Bus Adapter (Fabric)

EBS for Data Centers

The Fibre Channel Host Controller is a high-speed PCI card that provides server connectivity to the Fibre Channel Arbitrated Loop. The Fibre Channel Host Controller card is supplied in a kit that also includes one 5m Multi-Mode Fibre Channel Cable and Gigabit Link Module (GLM). The GLM is required to attach the Fibre Channel Host Adapter and to the FC Switch 8 or 16. The GLM converts digital signals to the optical signals required in the Fibre Channel environment.

SUN Server Fibre Channel S-Bus Adapter

EBS for Data Centers

The Fibre Channel Host Controller is an Sbus card that provides server connectivity to the Fibre Channel Switched Fabric. The Fibre Channel Host Controller card is supplied in a kit that also includes a Multi-Mode Fibre Channel Cable with a Gigabit Link Module. The GLM is required to attach the Fibre Channel Host Adapter and to the FC Switch 8 or 16. The GLM converts digital signals to the optical signals required in the Fibre Channel environment.

EBS INTERCONNECTS

Fibre Channel Storage Hub 7

EBS for Workgroups

A Fibre Channel Storage Hub 7 is a seven-port Fibre Channel Hub that acts as the focal point of the Enterprise Backup Solution for Workgroups. This storage hub provides up to seven multi-mode Fibre Channel connections. For example, five servers can be connected to the storage hub leaving one or two available ports for connections to Fibre Channel Tape Controllers. The storage hub is a rack-mountable unit with a 1U form factor.

Fibre Channel Storage Hub 12

EBS for Departments

A Fibre Channel Storage Hub 12 is a 12-port Fibre Channel Hub that acts as the focal point of the Enterprise Backup Solution for Departments. This storage hub provides up to 12 multi-mode or single-mode (supported in future release of EBS) Fibre Channel connections. For example, nine servers can be connected to the storage hub leaving three available ports for connections to Fibre Channel Tape Controllers. The storage hub is a rack-mountable unit with a 1U form factor.

Storage Hub 12 Management Option

An optional component that provides management for the Compaq Storage Hub 12. It shares same physical fibre channel cabling and uses a channel (frequency) not shared by the Fibre Channel protocol, thus no loss in data integrity or bandwidth. Utilizing out-of-band communication, the module allows master hubs to monitor and control cascaded hubs without depending on general network availability

Cascading Hub Support

This new feature certifies the addition of a second Storage Hub 12 to the Fibre Channel Arbitrated Loop. By adding a second Storage Hub 12, customers can increase the total available fibre ports on the loop. That would equate to increased device and server support. With the cascading of hubs (no more than two Storage Hub 12 per FCAL EBS), the Enterprise Backup Solution has an increased maximum configuration of up to 20 servers per solution that would require two Storage Hub 12 for connectivity. The alternative maximum configuration would support up to 14 DLT Drives in the Enterprise Backup Solution. Three Compaq DLT Libraries are certified in this configuration – the 35/70GB DLT Library, the TL891 and the TL895.

EBS INTERCONNECTS *(continued)*

Fibre Channel Storage Switch 8 and 16

EBS for Data Centers

High-performance Storage Area Network switch fabric

The Compaq StorageWorks Fibre Channel Storage Switch 8 and Fibre Channel Storage Switch 16 are high-performance, scalable switch fabrics designed for creating SAN's with Compaq StorageWorks EBS storage subsystems. Major benefits of these switch fabrics include:

- Eight (Fibre Channel Switch 8) or 16 (Fibre Channel Switch 16) 1 Gb/s non-blocking Fibre Channel connections for high data throughput
- Switch-to-switch connectivity over distances of up to 10 kilometers between two switches in support of applications such as remote data replication and disaster protection
- Dynamic path rerouting in the event of a link failure
- Full-duplex transmissions for high performance
- Multiple methods for switch management
- Support for future multi-switch cascading functionality

Fibre Channel SAN Switch 8 and 16

High performance Storage Area (SAN) switch fabric

A key component of Compaq's Enterprise Network Storage Architecture (ENSA), the Compaq StorageWorks Fibre Channel SAN Switch/8 and Fibre Channel SAN Switch/16 are high performance, scalable switch fabrics designed for creating SAN's with Compaq StorageWorks RAID Array 8000, ESA 12000 storage systems and EBS for Data Centers. Major features of these new switch fabrics include:

- Eight (Fibre Channel SAN Switch/8) or sixteen (Fibre Channel SAN Switch/16) 1 Gb/s non-blocking Fibre Channel connections for high data throughput.
- Both models pre-configured with Fabric operating software, WEB Based Management Tools, Zoning software, and QuickLoop™ FCAL emulation software for HP-UX (RA Products only)
- Dynamic path rerouting in the event of a link failure.
- Direct fabric attached server operating system support now includes Solaris 2.7.
- Support for interconnecting up to 4 switches together (2 switch hops for max) for creating larger SAN's.
- General 10-km link distance support for switch to switch connections.
- Multiple methods for switch management.
- Hot pluggable power supplies and optional second power supply
- Redundant, hot pluggable cooling fans on both switches.
- Backward compatibility between new Fibre Channel SAN switches and previous Fibre Channel switches.

Fibre Channel Tape Controller

EBS for Workgroups

The Fibre Channel Tape Controller provides the capability to attach differential SCSI Tape Libraries with DLT Tape drives to the Fibre Channel Loop. Each Fibre Channel Tape Controller has a single Fibre Channel connection and single 20 MB/s SCSI bus that can be connected to a maximum of two DLT 35/70 tape drives. The Fibre Channel Tape Controller is rack mountable and has 1U Form Factor.

Fibre Channel Tape Controller-II

EBS for Departments and EBS for Data Centers

The Compaq StorageWorks Fibre Channel Tape Controller-II is a 1U Fibre Channel-to-SCSI bridge that allows a differential SCSI tape device to communicate with other devices over a Fibre Channel. Each Fibre Channel Tape Controller-II has a single Fibre Channel connection and two SCSI buses supporting a maximum of four DLT 35/70 tape drives per controller. The dual-connector SCSI channels support any mixture of DLT Library Model 35/70, TL891 and TL895 Libraries. The Fibre Channel Tape Controller-II includes a rack mount kit.

EBS DLT LIBRARIES

One of the most important components of the Enterprise Backup Solution is the automated tape library. Compaq offers support for three different DLT library products:

- DLT 15-Cartridge Tape Library Model 35/70-2
- TL891 DLT Library
- TL895 DLT Library

Compaq DLT 15-Cartridge Library Model 35/70-2

EBS for Workgroups and EBS for Departments

This DLT Library contains up to a maximum of two DLT35/70 tape drives capable of storing up to 70 GB of data per tape cartridge. The Library contains a maximum of 15 DLT cartridges to provide a total storage capacity of 1 TB. The Enterprise Backup Solution for Workgroups will support one or two DLT 35/70 Tape Libraries with the Storage Hub 7. When configured within the EBS environment these libraries can be shared by the servers attached to the EBS Fibre Channel loop.

TL891 DLT Library

EBS for Workgroups and EBS for Departments

The TL891 is offered as a stand-alone tabletop unit or as a scalable/stackable rackmount unit, with a removable 10 cartridge magazine, and integrated bar code reader and two Compaq DLT 35/70 drives. The TL891 is built on a modular concept, offering unparalleled scalability and the ability to custom configure a rack mount solution to meet specific performance and capacity requirements. With 10 data cartridges, the TL891 base unit offers 700 GB of compressed storage capacity in a small 4U height.

TL895 DLT Library

EBS for Departments and EBS for Data Centers

The TL895 offers multiple terabytes of automated DLT backup and restore for mission-critical data running in mixed operating environments. It is the only high-capacity DLT device fully qualified by Compaq to run on both ProLiant and Alpha Series servers. The TL895 is also qualified on all Alpha/Intel based servers running Windows NT, NetWare, Tru64 UNIX, and OVMS operating systems, using industry-standard application software as a direct attached storage device. For use with the Enterprise Backup Solution, the TL895 is certified for use with Intel based ProLiants running Windows NT or NetWare.

EBS BACKPAQ WITH VERITAS

EBS BackPaq with Veritas

EBS for Workgroups

EBS BackPaq is designed to make the EBS for Workgroups even more affordable to the growing sets of Microsoft NT and NetWare customers looking for consistent, consolidated, high speed backup and restore. Compaq has partnered with VERITAS Software to provide five VERITAS Backup Exec server licenses and five Shared Storage Options packed with Compaq's Storage Hub 7 and Fibre Channel Tape Controller. This bundle, plus a Compaq DLT library and five Fibre Channel PCI adapters, is a complete EBS for Workgroups solution. The combination of these components and the EBS BackPaq with VERITAS is equivalent in price to five external DLT 35/70 drives attached to Five ProLiant servers. The benefits of EBS BackPaq are that the solution offers centralization, automation, performance, scalability, deployment over longer distances, Fibre Channel infrastructure for future enhancements, and investment protection for the same price as direct SCSI attach DLT 35/70 drives.

EBS BackPaq is a bundled configuration of the Hub7, FC Tape Controller and VERITAS Backup EXEC.

EBS ADAPTER SPECIFICATIONS

Fibre Channel Host Adapter (PCI)

Protocol	Fibre Channel Arbritated Loop
Data Transfer Method, PCI Model	32-bit PCI bus-master
Maximum Transfer Rate	100 MB/s
LED Indicators on Slot Panel	GBIC Transmit Status GBIC Receive Status

KGPSA-BC PCI Host Bus Adapter (Fabric)

Supported Servers	Alpha (PCI), Compaq (PCI)
Protocol	Fibre Channel Arbritated Loop and Switched Fabric
Data Transfer Method, PCI Model	32-bit PCI bus-master
Maximum Transfer Rate	100 MB/s
LED Indicators on Slot Panel	GLM Transmit Status GLM Receive Status

SUN Server Fibre Channel S-Bus Adapter

Supported Servers	SUN (S-Bus)
Protocol	Fibre Channel Arbritated Loop and Switched Fabric
Data Transfer Method, PCI Model	32-bit and 64-bit S-Bus
Maximum Transfer Rate	100 MB/s
LED Indicators on Slot Panel	GLM Transmit StatusGLM Receive Status

EBS INTERCONNECT SPECIFICATIONS

Fibre Channel Storage Hub 7

Dimensions (HxWxD)	1.69 x 8.6 x 14.75 in/4.3 x 21.8 x 37.5 cm
Weight	6 lbs/2.7 kg
Media Interface	Short- or long-wave, optical, hot pluggable
Maximum Number of Devices/Ports	Seven
LED Indicators on Front Panel	GBIC status (green), Port Fault/Bypass (amber)
Operating Temperature	32° to 132°F/0° to 50°C
Relative Humidity (non-condensing)	5% to 95%
Input Requirements	Range Line Voltage 100 to 250 VAC, Line Frequency 50 to 60 Hz
Power (Watts)	All ports empty 25W, All ports in use at 251 mA each 35W
Multi-Mode Fibre Channel Cable Kits	Cable Type 50 micron multi-mode fiber
Available Cable Length	6.5, 16.25 and 48.75 ft/2, 5 and 15 meter

Fibre Channel Storage Hub 12

Dimensions (HxWxD)	1.66 in x 17.3 in x 17.2 in
Weight	10.5 lbs
Control Indicators	
LEDs	Power GBIC LED Fault/Self Test Port LED Indicator Port Bypass LED
Controls	Reset Button

EBS INTERCONNECT SPECIFICATIONS *(continued)*

Fibre Channel Storage Hub 12 *(continued)*

Connectivity	
Ports	12
Data Rate	100 MB/s
Topology	Fibre Channel Arbitrated Loop
Temperature Range	50° to 104°F/10° to 40°C
Relative Humidity	20% to 80%, non-condensing
Input Requirements	
Voltage	100 to 240 VAC, Auto Ranging
Line Frequency	50 to 60 Hz
Typical Input Current	3 A typical @ 110 VAC
Power (Watts)	85W maximum

Storage Hub 12 Management Option

Mechanical Specifications	
Dimensions (HxWxD)	
Product	1.5 x 3.125 x 6 in/3.81 x 7.94 x 15.24 cm
Shipping	2 x 11.5 x 8 in/5.08 x 29.21 x 20.32 cm
Connections	RS-232 and 10Base-T
Weight	
Product	0.4 lb/0.18 kg
Shipping	2.34 lbs/1.06 kg
Module Color	Beach Gray
Acoustic Noise	During normal operation, the sound pressure level at the average bystander position, per ISO 7779, shall not exceed 46 dBA.
Environmental Specifications	
Temperature	
Operating	50° to 104°F/10° to 40°C
Non-operating	–22 to 140°F/–30° to 60°C
Relative Humidity	
Operating	20% to 80% non-condensing
Non-operating	10% to 90% non-condensing
Shock	
Operating	5G, 11 msec half-sine wave
Non-operating	140G, 2 msec half-sine pulse
Random Vibration	
Operating	1.0G rms, 10 to 500 Hz
Non-operating	2.0G rms, 10 to 500 Hz
Altitude	
Operating	0 to 10,000 ft/0 to 3,048 m
Non-operating	0 to 20,000 ft/0 to 6,096 m
Airflow (rear-to-front)	24 cfm/680 lpm

EBS INTERCONNECT SPECIFICATIONS *(continued)*

Fibre Channel Storage Switch 8 and 16

Technical Specifications

Features	Description
Fibre Channel protocol	Fibre Channel ANSI Standards: FC-AL, FC-AL-2, FC-FLA, FC-GS-2, FC-PH, FC-PH-2, FC-PH-3, FC-PLDA, FC-SW, and FCP
System architecture	Non-blocking
Number of Fibre Channel ports	8 (FC Switch 8) 16 (FC Switch 16)
Fibre Channel port speed	1.0625 Gb/s, full-duplex
Operation modes	Fibre Channel Class 2 and 3 connectionless service
Aggregate bandwidth	8 Gb/s (FC Switch 8) 16 Gb/s (FC Switch 16)
Frame buffers	16 2112 byteframe buffers per port
Latency	<2 µsec with no contention
Data traffic types	Unicast, multicast, and broadcast
Chassis types	Back-to-front airflow, power out the front
Rack mount dimensions	2U, 19-in (EIA compliant) H: 3.44 in/8.7 cm W: 17.62 in/44.75 cm D: 16.99 in/43.1 cm
Tabletop dimensions	H: 3.44 in/8.7 cm W: 16.88 in/42.9 cm D: 16.99 in/43.1 cm
Supported power range	
Nominal	100 to 120 VAC, 50/60 Hz 200 to 250 VAC, 50/60 Hz
Operational	90 to 134 VAC, 50/60 Hz 180 to 257 VAC, 50/60 Hz
Weight	19 lbs/8.6 kg
Diagnostics	Embedded online and offline diagnostics

Switch Management Specifications

Features	Description
Fabric services	Simple Name Server, Registered State Change Notification (RSCN), Alias Server (Multicast)
Management access	Telnet, SNMP, SWCC Web-based tools
Management interfaces	RJ-45, 10BaseT Ethernet, In band Fibre Channel link, front panel LED

Environmental Specifications

Features	Operating Range
Temperature	32°F to 104°F/ 0°C to 40°C
Humidity	5% to 85% non-condensing @ 104°F/40°C
Altitude	Up to 9,800 ft/3,000 m
Shock	4 G, 11 ms_sine low impulse
Vibration	5 G, 0 to 3 kHz

EBS INTERCONNECT SPECIFICATIONS *(continued)*

Fibre Channel Storage Switch 8 and 16 *(continued)*

Regulatory Specifications

Country	Safety	EMC
Canada	ULC 1950 Issue 3	ICES-003
United States	UL 1950 Class A	FCC Part 15
Japan	EN60950 A3	VCCI Class 1
(International)	EN60950 A3	EN55022
	Level A	EN50082-2 (immunity)

Fibre Channel SAN Switch 8 and 16

Features	Description
No. Fibre Channel ports	8 Universal Ports (FC SAN Switch/8) 16 Universal Ports (FC SAN Switch/16)
Fibre Channel port speed	1.0625 Gb/sec
Operation modes	Fibre Channel Class 2 and 3 connectionless service
Aggregate bandwidth	8 Gb/s (FC SAN Switch/8) 16 Gb/s (FC SAN Switch/16)
Latency	<2 µsec with no contention
Data traffic types	Unicast, multicast, and broadcast
Mechanical Specifications	
SAN Switch/8	1U, 19-in (EIA compliant) H: 1.71 in/4.34 cm W: 16.87 in/42.86 cm D: 17.72 in/45.0 cm Weight: 14 lbs/6.36 kg
SAN Switch/16	2U, 19-in (EIA compliant) H: 3.44 in/8.73 cm W: 16.87 in/42.86 cm D: 17.72 in/45.0 cm Weight: 25.6 lbs/11.59 kg
Supported power range	100 to 240 VAC nominal, 47 to 63 Hz
Diagnostics	Embedded online and offline diagnostics

Switch Management Specifications

Features	Description
Fabric services	Simple Name Server, Registered State Change Notification (RSCN), Alias Server (Multicast), Zoning (optional), QuickLoop (optional)
Management access	Telnet, SNMP, SWCC WEB Based Management Tools
Management interfaces	Ethernet (RJ-45, 10/100 Base TX UTP), In band Fibre Channel link, front panel display (FC SAN Switch/16)

Environmental Specifications

Features	Operating Range
Temperature	10°C to 40°C
Humidity	5% to 85% non-condensing @ 40°C
Altitude	0 to 3 kilometers above sea level
Shock	5g, 11 ms duration, half sine
Vibration	5, 5-500-5Hz@1.0 octave/minute

EBS INTERCONNECT SPECIFICATIONS *(continued)*

Regulatory Specifications

Safety

UL Standard 1950, 3rd Edition
CSA (Canada)
IEC950/EN 60 950, (CF-Europe)
TUV (Germany)

EMI

FCC Rules & Regulations, Part 15B, Class A level
CISPR22 Class A
EN55022 Class A
VCCI Class A ITE
AS/NZS 3548 Class A

Immunity

IEC 801-2 (IE: IEC 1000-4-2), Severity Level 3 for ESD
IEC 801-3 (IE: IEC 1000-4-3), Severity Level 3 for Radiated Fields
IEC 801-4 (IE: IEC 1000-4-4), Severity Level 3 for Fast Transients
IEC 801-5 (IE: IEC 1000-4-5), Severity Level 3 for Surge Voltage
IEC 801-6 (IE: IEC 1000-4-6), Conducted Emissions

Fibre Channel Tape Controller

Dimensions (HxWxD)	1.7 x 17 x 9 in/4.3 x 43 x 23 cm
Weight	7 lbs/3.2 kg
Control Indicators	
LEDs	Power
	Self Test Failure
	Fibre Channel Activity
	SCSI Activity
	Ethernet Activity
Controls	On/Off
Connectivity	
Ports	2 (comprised of 1 Fibre Channel and 1 SCSI port)
Data Rate	1,062.5 Mb/s
Topology	Fibre Channel Arbitrated Loop
Protocols	FCP (SCSI 3), PLDA
Temperature Range	41° to 104°F/ 5° to 40°C
Relative Humidity	5% to 80%, non-condensing
Input Requirements	
Voltage	110 to 240 VAC, Self Sensing
Line Frequency	50 to 60 Hz
Power (Watts)	85W maximum

Fibre Channel Tape Controller-II

Dimensions (HxWxD)	1.7 x 17.0 x 9.0 in/4.3 x 43 x 23 cm
Weight	7 lbs/3.2 kg
Control Indicators	
LEDs	Power
	Self Test Failure
	Fiber Channel Activity
	SCSI Activity
	Ethernet Activity
Controls	On/Off

EBS INTERCONNECT SPECIFICATIONS *(continued)*

Fibre Channel Tape Controller-II *(continued)*

Connectivity	
Ports	3 total (comprised of 1 Fibre Channel and 2 SCSI ports)
Data Rate	1,062.5 Mb/sec
Topology	Fibre Channel Arbitrated Loop, Fabric
Protocols	FCP (SCSI 3), PLDA
Temperature Range	41° to 104°F/5° to 40°C
Relative Humidity	5% to 80%, non-condensing
Input Requirements	
Voltage	110 to 240 VAC, Self Sensing
Line Frequency	50 to 60 Hz
Power (Watts)	85W maximum

EBS DLT LIBRARIES SPECIFICATIONS

DLT 15-Cartridge Tape Library

Capacity	
1:1 compression	525 GB
2:1 compression	1.05 TB
Data	
1:1 compression	35 GB per cartridge
2:1 compression	70 GB per cartridge
Cartridges	15 in 3 removable magazines
Supported Media	DLT Tape IV, DLT Tape IIIXT, DLT Tape III, DLT Tape II
Number of drives	2 DLT 35/70
Performance	
1:1 compression	36 GB/hr
2:1 compression	72 GB/hr
Typical	52 GB/hr
Interface	Differential SCSI Fast and Wide, SCSI-2, (68-pin), one or two drives plus robot per channel
Dimensions (HxWxD)	14 x 17.5 x 29 in/35.5 x 44.5 x 73.7 cm
Weight	97 lbs/44 kg
LEDs	Power
Tape Drive Characteristics	Tape Speed: 160 ips Rewind Speed: 175 ips Recording Method: Serpentine Number of Tracks (physical): 208 Blocks per Track: Variable Bytes per Block: Variable Blocks per Frame: Variable Percentage ECC: 25% Bytes per Group: 64,000 Data Frame/Group: 16 Recording Density/Inch: 62,500 Track Density/Inch: 256 Encoding Method: (2,7) RLL Native Data Transfer Rate: 5 MB/s Error Correction: Reed Solomon (3 levels) Read-Write Head: four-channel, ferrite w/mig Data Compression Algorithm: DLZ (Digital-Lempel-Ziv) Specifications

EBS DLT LIBRARIES SPECIFICATIONS *(continued)*

DLT 15-Cartridge Tape Library *(continued)*

Library Characteristics	Average tape access: < 14 seconds Average tape exchange: 28 seconds (From eject tape, robotically exchange tape, and reload) Reliability: Robot/1 Million MSBF (Mean Swaps Before Failure)
Power Requirements	100 to 240 VAC 2.5/1.5 A 140 to 150W 50 to 60 Hz

TL891 Specifications

Capacity	
1:1 compression	350 GB
2:1 compression	700 TB
Data	
1:1 compression	35 GB per cartridge
2:1 compression	70 GB per cartridge
Cartridges	10 in a single removable magazines
Supported Media	DLT Tape IV, DLT Tape IIIXT, DLT Tape III, DLT Tape II
Number of drives	2 DLT 35/70
Performance	
1:1 compression	36 GB/hr
2:1 compression	72 GB/hr
Typical	52 GB/hr
Interface	Differential SCSI Fast and Wide, SCSI-2, (68-pin), one or two drives plus robot per channel
Environmental	
Temperature	
Operating	50° to 104°F/10° to 40°C
Non-operating	–40° to 140°F/–40° to 60°C
Humidity	
Operating	15% to 85% non-condensing
Non-operating	10% to 95% non-condensing
Altitude	10,000 ft/3.0 km (operating and non-operating)
Size	
Height	6.97 in/17.7 cm 4U Rack Height
Width	17 in/43.18 cm
Depth	
Overall	23.75 in/60.35 cm
Behind panel	22.75 in/57.79 cm
Weight	62 lbs/28 kg (with two drives)
Power Consumption	
TL891	115 VAC @ 1.8 A, 50/60 Hz single phase switchable 240 VAC @1.2 A, 50/60 Hz single phase switchable
Power Requirement	200W, maximum IEC 320 male connector
Acoustic Noise	
Noise Power Emission Level	7 bels, maximum
Avg. Sound Pressure Level	52 dBA

EBS DLT LIBRARIES SPECIFICATIONS *(continued)*

TL891 Specifications *(continued)*

Product Safety Requirements and Approvals	FCC Class A, UL1950, CSA950, TUV EN 60 950, CE Class A
Other	EN60950 (IEC 950), CSA C22.2 950, VDE 0805/11.92 (TUV), EMKO-TSE 207/94 (NEMKO, FIMKO, DEMKO, SEMKO), NOM-019-SCFI-1993, KONKAR, MEEI, GOST, EVPU, SIQ, VCCI Class 1, SMA AZ/NZS 3548 Class A, BCIQ, CE Marking Directive (93/68/EEC), EMC Directive [89/336/EEC], Low Voltage Directive [73/23/EEC],
MTBF	280,000 hours
MSBF(5)	500,000 cartridge exchange cycles
MTTR	< 30 minutes
Tape Drive Characteristics	Tape Speed: 160 ips Rewind Speed: 175 ips Recording Method: Serpentine Number of Tracks (physical): 208 Blocks per Track: Variable Bytes per Block: Variable Blocks per Frame: Variable Percentage ECC: 25% Bytes per Group: 64,000 Data Frame/Group: 16 Recording Density/Inch: 62,500 Track Density/Inch: 256 Encoding Method: (2,7) RLL Native Data Transfer Rate: 5 MB/s Error Correction: Reed Solomon (3 levels) Read-Write Head: four-channel, ferrite w/mig Data Compression Algorithm: DLZ (Digital-Lempel-Ziv) Specifications

Localization Kits

Country Kit, U.S./Canada/Mexico	349386-001
Country Kit, Australia/China/New Zealand	349386-011
Country Kit, South East Asia/India	349386-AR1
Country Kit, Central Europe	349386-021
Country Kit, United Kingdom/Hong Kong	349386-031
Country Kit, Switzerland	349386-111
Country Kit, Italy	349386-061
Country Kit, Denmark	349386-081
TL891 Country Kit, Japan	120884-291

Rack Mounting Kits

MiniLibrary Table Top to Rack Mount Conversion Kit, Metric/RETMA racks	120882-B21
MiniLibrary Table Top to Rack Mount Conversion Kit, Compaq racks	120883-B21

EBS DLT LIBRARIES SPECIFICATIONS *(continued)*

DLT Library TL895 Specifications

Capacity	
1:1 Compression	3.36 TB
2:1 Compression	6.72 TB
Data	
1:1 Compression	35 GB per cartridge
2:1 Compression	70 GB per cartridge
Cartridges	96 Fixed and a 4-slot I/O port
Supported Media	DLT Tape IV, DLT Tape IIIXT, DLT Tape III, DLT Tape II
Number of Drives	Up to 7 DLT 35/70
Performance	
1:1 Compression	126 GB/hr
2:1 Compression	252 GB/hr
Typical	180 GB/hr
Dimensions	
Height	56 in/142 cm
Width	23 in/58 cm
Depth	36 in/71 cm
Weight	500 lbs/227 kg with 7 drives and 96 cartridges
Communication Interfaces	
Electrical	Differential SCSI-3 “P” Fast & Wide, 68-pin Micro D female
Software	SCSI-2 medium changer command set
Power Consumption (robotics and seven drives)	
Standby	270 Watt, 350 VA (nominal)
Average running	310 Watt, 405 VA (100% duty cycle)
Peak running	340 Watt, 430 VA
Environmental	
Operating	
Humidity	20% to 80%, non-condensing
Temperature	59° to 90°F/15° to 32°C
Altitude	Sea level to 10,000 ft/3,000 m
Non-operating (storage & shipping)	
Humidity	5% to 95%, non-condensing
Temperature	–40° to 151°F/–40° to 66°C
Altitude	Sea level to 12,000 ft/3,658 m
Robotics Reliability	
MTBF	170,000 power-on hours
MSBF	2 million load/unload cycles (swaps)
MTTR	< 30 minutes
Agency Approvals	
Safety	UL 1950 Listed, CSA, C22.2-No. 950 TUV-EN60950
Emission	FCC Part 15B Class A, CE Mark, VCCI Class 1

EBS DLT LIBRARIES SPECIFICATIONS *(continued)*

35/70 Drive Specifications

Drive Reliability	
MTBF	200,000 Hours at 100% Duty Cycle
Tape Drive Characteristics	
Tape Speed	160 ips
Rewind Speed	175 ips
Recording Method	Serpentine
Number of Tracks (physical)	208
Blocks per Track	Variable
Bytes per Block	Variable
Blocks per Frame	Variable
Percentage ECC	25%
Bytes per Group	64,000
Data Frame/Group	16
Recording Density/Inch	62,500
Track Density/Inch	256
Encoding Method	(2,7) RLL
Native Data Transfer Rate	5 MB/s
Error Correction	Reed Solomon (3 levels)
Read-Write Head	four-channel, ferrite w/mig
Data Compression Algorithm	DLZ (Digital-Lempel-Ziv) Specifications

TL895 Related Options

The TL895 solution includes five separate SKU details:
SKU1-Library System
SKU2- Drive Upgrade Kit
SKU3-Localization Kit
SKU4- Media Kit
SKU5- SCSI Cable Kit

DLT Library System	
96 slot TL895 library unit, 2 drive	349350-B22
96 slot TL895 library unit, 3 drive	349350-B23
96 slot TL895 library unit, 4 drive	349350-B24
96 slot TL895 library unit, 5 drive	349350-B25
96 slot TL895 library unit, 6 drive	349350-B26
96 slot TL895 library unit, 7 drive	349350-B27
Localization Kits	
Country Kit, (U.S./Canada/Mexico)	349386-001
Country Kit, (Australia/China/New Zealand)	349386-011
Country Kit, (South East Asia/India)	349386-AR1
Country Kit, (Central Europe)	349386-021
Country Kit, (United Kingdom/Hong Kong)	349386-031
Country Kit, (Switzerland)	349386-111
Country Kit, (Italy)	349386-061
Country Kit, (Denmark)	349386-081
Country Kit, (Japan)	349386-291
Drive Upgrade Kits	
DLT7000 drive upgrade kit	349351-B21
DLT7000 drive upgrade kit (Japan)	349351-291

EBS DLT LIBRARIES SPECIFICATIONS *(continued)*

TL895 Related Options *(continued)*

Media Cartridges	
DLT IV data cartridges	
Single Pack	295194-B21
7 Pack	295192-B21
DLT Cleaning Cartridge	199704-001
Compaq ProLiant Imbedded Controllers	
Compaq SE Wide Ultra3	272514-001
Compaq Dual Channel SE Wide Ultra3	295554-B21
Compaq Dual Channel Ultra2 / LVD	348757-B21
SCSI Cable Kits	
Wide Differential SCSI cable, 5 meters	328215-001
Wide Differential SCSI cable, 10 meters	328215-002
Wide Differential SCSI cable, 15 meters	328215-003
Wide Differential SCSI cable, 20 meters	328215-004
ProLiant Connectivity Kits	
Fast Wide Single Ended, 68 HD	
U.S., Canada, Mexico	113395-001
Central Europe, UK, Hong Kong	113395-B31
Japan	113395-291
Fast Wide Single Ended, VHDCI	
U.S., Canada, Mexico	113396-001
Central Europe, UK, Hong Kong	113396-B31
Japan	113396-291
SCSI Converter Rack Mounting Bracket	122612-B21
(holds 4 Connectivity Kit DWZZC converters)	

Warranty

The Fibre Channel Host Controller card, Fibre Channel Hub 7, Fibre Channel Tape Controller, 35/70 DLT Library, and TL891 are all covered by a three-year parts warranty[1], one-year on-site warranty and a one-year labor warranty[1].

Required Warranty Service Training

Compaq requires that service technicians attend Service Training for the above listed products at an Authorized Compaq Training Center prior to installing and servicing this product. Additional information on Compaq training is available on the Compaq website at www.compaq.com/resellers.

Compaq strongly recommends that the above products be installed by a trained Compaq Authorized Service Technician.

EBS BACKPAQ WITH VERITAS SPECIFICATIONS

Fibre Channel Storage Hub 7

Dimensions (HxWxD)	1.69 x 8.6 x 14.75 in/4.3 x 21.8 x 37.5 cm
Weight	6 lbs/2.7 kg
Media Interface	Short or long wave, optical, hot pluggable
Maximum Number of Devices/Ports	Seven
LED Indicators on Front Panel	GBIC status (green), Port Fault/Bypass (amber)
Operating Temperature	32° to 132°F/0° to 50°C
Relative Humidity (non-condensing)	5% to 95%
Input Requirements	Range Line Voltage 100 to 250 VAC, Line Frequency 50 to 60 Hz
Power (Watts)	All ports empty 25W, All ports in use at 251 mA each 35W
Multi-Mode Fibre Channel Cable Kits	Cable Type 50 micron multi-mode fiber
Available Cable Length	6.5, 16.25 and 48.75 ft/2, 5 and 15 meter

Fibre Channel Tape Controller

Dimensions (HxWxD)	1.7 x 17 x 9 in/4.3 x 43 x 23 cm
Weight	7 lbs/3.2 kg
Control Indicators	
LEDs	Power Self Test Failure Fibre Channel Activity SCSI Activity Ethernet Activity
Controls	On/Off
Connectivity	
Ports	2 (comprised of 1 Fibre Channel and 1 SCSI port)
Data Rate	1,062.5 Mb/sec
Topology	Fibre Channel Arbitrated Loop
Protocols	FCP (SCSI 3), PLDA
Temperature Range	41° to 104°F/ 5° to 40°C
Relative Humidity	5% to 80%, non-condensing
Input Requirements	
Voltage	110 to 240 VAC, Self Sensing
Line Frequency	50 to 60 Hz
Power (Watts)	85W maximum

[1] Certain restrictions and exclusions apply. Consult the Compaq Customer Support Center for details.